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THE HISTORY OF GONORRHŒAL ARTHRITIS *

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OUR knowledge of gonorrhœal arthritis is based particularly upon the work of three men :—

Brodie, of London, who identified the condition as a distinct type of articular disease ;

Fournier, of Paris, who described its clinical characteristics ; and

Fuller, of New York, who called attention to its focal nature.

The association of articular inflammation with gonorrhœa had been noted before Brodie's time. Mondor tells us that Pierre van Forest in 1507 described a case of gonorrhœa with swelling of the knee ; that Martinière in 1664 wrote of patients with gonorrhœa who had pains in the joints ; and that Selle in 1781 said that gonorrhœal matter can cause articular pain.¹ In 1786 John Hunter wrote of a gentleman who had rheumatic pains with each attack of gonorrhœa.² Astley Cooper is said to have mentioned a similar occurrence in his Lectures of 1806 to 1807.³ Whately, in his book, "Gonorrhea Virulente," published in 1801, mentions a patient with gonorrhœa who developed inflammation of the wrists and knees.⁴

Swediaur is often credited with having first described gonorrhœal arthritis. In his "Practical Observations on the More Obstinate and Inveterate Venereal Complaints," published in London in 1784, he refers to "fixed or wandering pains arising in different parts of the body . . . ascribed to venereal poison," but the text clearly indicates that he means lues.⁵ A translation of the Fourth French Edition (1801) of "Swediaur's Treatise on Syphilis" was published in Philadelphia by Thomas T. Hewson in 1815. On p. 108 we read : "A very considerable swelling of the knee (sometimes of both knees and heels at once) some-

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times occurs in men with a blennorrhagia. These pains, accompanied by more or less symptomatic fever, continue for two or three weeks and gradually go off leaving a stiffness in the joints which lasts for many months." ⁶ However, in the 1819 edition of the book, also published in London, although the same statement appears, the author further states: "I do not dare decide on the character of this complaint for want of sufficient observation; but in all cases that have come to my knowledge it seems to partake of the gouty character . . ." ⁷

In 1818 Benjamin Brodie, then assistant surgeon to St. George's Hospital in London, published his book "Pathological and Surgical Observations on Diseases of the Joints," which was, he tells us in his "Autobiography," the result of daily study over a period of years of hospital patients with joint disease. On p. 54 this statement appears: "The following case furnishes an example of a disease, which, as far as I know, has not been described by any pathological or surgical writer." A case of arthritis which developed during an attack of gonorrhœa is carefully described and a description of four similar cases follows.⁸ Brodie's book was widely read. Five editions were published in London, and various editions were reprinted in Philadelphia, Boston and Washington. This study of joint diseases was of a high order of clinical investigation which stimulated interest in these disorders, and there can be no question of the fact that it brought about widespread discussion of that form of rheumatism, as it was then called, which is associated with gonorrhœa.

The belief that gonorrhœa was capable of causing a distinct form of rheumatism was widely but not universally accepted. The current lectures of Sir Astley Cooper on the Venereal Disease are recorded in the *Lancet* of 1824. He included rheumatism among the complications of gonorrhœa,⁹ as did Mr. Lawrence, of St. Bartholomew's Hospital.¹⁰ Cases are reported in the *Lancet* of 1829-30¹¹ and 1835-36.¹²

A correspondent to the *Lancet* in 1835 expresses the opinion that gonorrhœal rheumatism is due to the use of copaiba, and states that Hunter and Abernethy made little or no mention of the disease, probably because they scarcely ever, if at all, used copaiba.¹³ The belief that copaiba might cause gonorrhœal rheumatism was evidently fairly prevalent, as there is a note in the *Lancet* of

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1841-42 to the effect that Valpeau did not consider copaiba a causative factor in this condition.¹⁴

A lecture by Ricord is contained in the *Lancet* of 1848. He notes that gonorrhœal arthritis is rare among women, that the disease occurs around the second to fourth week of gonorrhœa, and sometimes later, that all joints may be affected, and that there is a tendency to chronicity.¹⁵

Gonorrhœal arthritis is mentioned in "Graves' Clinical Medicine," Dublin, 1843; in "Flint's Practice," Phila., 1867; and in the "Surgery's" of Druitt, 1842, Muller, 1846, and Erichsen, 1854. These three latter were written by Englishmen, but published in Philadelphia.

Reference has been made to the fact that gonorrhœal arthritis was not universally accepted as a distinct pathological entity. Objections were offered for reasons such as the following:—

Gonorrhœal rheumatism was said to be the simultaneous existence of two separate diseases.

Rheumatism was said to sometimes cause gonorrhœa.

The urethritis was said to act as an exciting cause of rheumatism in the same manner as exposure to cold.

The extent and the persistence of such views is somewhat surprising, but, considering the state of knowledge of urethral infections at that period, they were not ill-founded. The term gonorrhœa was applied to practically all urethral discharges. Cases of gout followed by a urethral discharge were noted and the urethritis attributed to the gout. To-day we would explain this by saying that the high protein diet and alcoholic excess which precipitated the gout also activated a chronic prostatic infection which resulted in a urethral discharge.

Elliotson wrote in 1860: "I remember when the mass of the profession denied gonorrhœal arthritis."³ In the *American Journal of the Medical Sciences* for 1868 there is an abstract of an article in the *Italian Journal of Venereal Diseases* in which Professor Profeta says that gonorrhœal arthritis is simply the coincidental occurrence of two unrelated diseases.¹⁶

In 1859 S. D. Gross, in the first edition of his "Surgery," says that the constitutional complications of gonorrhœa are remarkably common in London, but extremely infrequent in the United States. From not having witnessed any cases in his own practice or in that of his friends, he is strongly inclined to believe that they are

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imaginary. Gonorrhœa was strictly a local malady, but he was willing to admit that a person predisposed to rheumatism might be likely to develop it if urethritis was present.¹⁷ Gross held this view until the sixth edition of his book, published in 1882, in which he mentions a case of gonorrhœal arthritis of the knees, ankles and elbows, which had been admitted to Jefferson Hospital. He still thought that a strong predisposition to rheumatism was the most important factor.

It was in answer to arguments of this nature advanced in the French Academy of Medicine that Fournier wrote his papers. He insisted that gonorrhœa was the essential, direct and necessary cause of gonorrhœal arthritis, and that if there was no gonorrhœa there could be no gonorrhœal rheumatism. He pointed out that gonorrhœal rheumatism differed from simple rheumatism, by which he meant rheumatic fever, in symptoms, localisation, course, possible complications, later results and diathesis.

Fournier's differentiation of gonorrhœal arthritis from rheumatic fever may be summarised as follows: In rheumatic fever there was often a history of exposure to cold or previous attacks of the disease following such exposure. In gonorrhœal rheumatism there was no history of exposure to cold, no history of rheumatism in the family, and no history of previous rheumatism unless the patient had urethritis. The gonorrhœal variety was often afebrile. When fever was present it was seldom as high as in rheumatic fever, would not last so long, and subsidence of the fever was not accompanied by subsidence of the inflammation of the joints. In gonorrhœal arthritis there was not the profound weakness, profuse sweating, strongly acid urine and cutaneous eruptions seen in rheumatic fever. Gonorrhœal arthritis was often mono-articular, although two, three or four joints might be involved, but there was not the generalised joint involvement encountered in rheumatic fever. The joint inflammation was more fixed in gonorrhœal arthritis; there was no rapid subsidence and no complete transfer from one joint to another, that is, new joints would be involved without subsidence of the inflammation of the joints already affected. Resolution was slow, and might be followed by persistent hydrarthrosis. Cardiac complications were rare in gonorrhœal arthritis, ophthalmia was common. Fournier explained that he did not mean

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the ophthalmia due to direct contamination, and he, therefore, evidently referred to iritis.

Fournier thought that gonorrhœal arthritis in its pure form presented distinctive articular symptoms which were often sufficient to indicate the correct diagnosis without first ascertaining the presence of urethritis. This idea is still more or less prevalent, but it is well to bear in mind two facts: (1) Fournier gave iritis a prominent place in the symptomatology, and this lesion is apparently not so common now. (2) He did not deal with types of arthritis commonly met with to-day, such as, for example, that form dependent upon infection in the upper respiratory tract.

Fournier introduced a factor which has been a perplexing one ever since. I refer to the factor of trauma to the urethra as a causative agent in precipitating gonorrhœal arthritis. The gonococcus had not been identified at the time Fournier presented his studies. Practically all urethral discharges were called gonorrhœa. In France the common term used was blennorrhagia, which was also applied to balano-posthitis, vulvo-vaginitis and genital ulcerations not definitely syphilitic. Fournier commented on the occurrence of arthritis only in association with the urethral type of blennorrhagia, and was thereby led to the conclusion that irritation of the urethra was responsible for the arthritis. He thought that there was a "rheumatogenic area" in the urethra, and that the passage of a catheter might excite this area sufficiently to cause rheumatism. He said that in former days the relation between the urethral inflammation and the arthritis would have been called sympathetic. At the period in which he wrote it was called reflex.¹⁸ To-day it is, of course, recognised as being metastatic. While there can be no doubt that direct trauma to the urethra during gonorrhœa may favour metastasis, yet it is questionable whether this factor is actually responsible for any appreciable number of cases of arthritis.

Fournier described a form of gonorrhœal arthritis (*le forme noueuse*) which he called periostosis, which, he said, was characterised by "solid exudates" or "growths on the bones."¹⁹ The observation was based on palpation of the lesions in living subjects and not on pathological examination of the joints at post-mortem. Therefore, this form of gonorrhœal arthritis cannot be considered

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identical with that type seen to-day in which osteo-arthritis lesions are demonstrable by the Roentgen-ray.

Fournier's contributions practically established gonorrhœal arthritis as a separate and distinct form of joint disease. The present clinical classification of the disease is largely based on his teachings.

The gonococcus was described by Neisser in 1879, and shortly thereafter the organisms were recovered from joint effusion in cases of gonorrhœal arthritis.²⁰ This definitely proved that arthritis might be caused by migration of gonococci from the site of the primary infection.

From the time of the recognition of gonorrhœal arthritis until early in the twentieth century treatment was directed primarily to the inflamed joints. Brodie recommended leeches, blisters, linaments and fomentations locally, and thought the best drug was vinum colchici.⁸ Venesection was later used, as would be expected. The use of splints and casts was reported around 1880, and it was also pointed out that casts were likely to favour ankylosis. Surgical drainage of the affected joints was advocated later. Potassium iodide was used as early as 1835.²¹ Maclagan, who introduced the salicylates in the treatment of rheumatic fever, found that they were of no value in gonorrhœal arthritis.²² In the *Lancet* of August 18th, 1883, there are three letters from practitioners in answer to a query relative to the treatment of gonorrhœal arthritis. The following remedies were stated to have been used successfully: Flex. of manaca; balsam of copaiba with tn. iodine and tn. belladonna locally; and sp. nitrous ether, $\frac{1}{2}$ dram every half-hour.²³ It is reported that the faradic current caused immediate and striking relief,²⁴ and good results followed the administration of small doses of oil of wintergreen.²⁵

After reviewing these various treatments, one cannot escape the impression that many cases of gonorrhœal arthritis will recover spontaneously.

In the late years of the nineteenth century Eugene Fuller, of New York, began to treat chronic post-gonorrhœal infections by digital massage of the seminal vesicles through the rectum.²⁶ He later came to suspect that gonorrhœal arthritis was caused by infection in the vesicles, and he devised the operation of seminal vesiculotomy for the purpose of draining these organs. The first series of cases treated in this manner is reported in

the "Annals of Surgery" for 1905.²⁷ The procedure was later modified by also incising the prostate to afford drainage.

Fuller's operation has fallen into disuse principally because more simple methods of treating the infection in the vesicles and prostate have proved effective. However, his work established the importance of these focal areas in the production of arthritis. His teachings were obscured for a time, because his reports coincided with the introduction of serums and vaccines in the treatment of the complications of gonorrhœa, and much attention was given to these biological products.

Fuller wrote, "gonorrhœal arthritis so-called can exist independent of the gonococcus."²⁷ He thus called attention to the rôle of secondary organisms in the ætiology of this type of arthritis. This principle has also received wide recognition.

The history of gonorrhœal arthritis is of importance because of its bearing on our present conception of the disease. It is now well established that arthritis may follow any primary gonococcal infection, but it is most commonly encountered in association with specific urethritis in the male. However, the term is still often used in its historical sense of a joint disease associated with a urethral discharge.

The usual studies do not differentiate arthritis that complicates gonococcal urethritis from arthritis that occurs with post-gonococcal urethritis; and recurrences of gonorrhœal arthritis are assumed to be essentially similar to the original attack even though gonococci cannot be demonstrated in the genito-urinary tract at the time of recurrence.

As previously shown, the clinical classification of the disease is based on investigation carried out before the identification of the gonococcus.

Advance in our knowledge could be expected to follow study of the symptoms and course of the articular lesions with relation to the original gonococcal infection, and the later changing bacterial flora of the urethral and adnexal infections. Such studies should stimulate more general interest in methods of dealing with such discouraging features as chronicity and recurrence, which are now often accepted as necessary characteristics of the disease.

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